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| 09/856,608      | 06/27/2001  | Shinya Kimoto        | F-6996              | 9941             |

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| EXAMINER |
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CANTELMO, GREGG

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/856,608

Applicant(s)

KIMOTO ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Preliminary Amendment***

1. The preliminary amendment has been entered. Claims 1-9 have been amended and claims 1-10 are pending.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

3. The information disclosure statement filed August 9, 2001 has been placed in the application file and the information referred to therein has been considered as to the merits.

### ***Drawings***

4. Figures 15 and 16 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

- a. reference character 9 in Fig. 15 does not appear to be recited in the background art of the instant application;
- b. reference character 43 in Fig. 10A does not appear to be recited in the written description.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Battery pack with reduced temperature differential between cells.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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8. Claims 1-3 and 5 rejected under 35 U.S.C. 102(b) as being anticipated by JP 07-014616-A (JP '616).

JP '616 discloses a rechargeable battery comprising a battery housing 2 containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery pack with a required electrical capacity (see Fig. 1 as applied to claim 1).

JP '616 discloses a rechargeable battery comprising a battery housing 2 containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery module and these modules are arranged in parallel in a plurality of rows adjacent to one another between the long sides of the battery housings and the plurality of rows are linked together to form a battery pack with a required electrical capacity (Fig. 1 as applied to claim 2).

A heat transfer plate 5 with high-heat conductivity (abstract) is provided between the modules disposed in parallel (Fig. 1 as applied to claim 3).

Air flows through heat transfer plate 5 and functions as a coolant (abstract and Fig. 1 as applied to claim 5).

9. Claims 1, 2 and 6-8 rejected under 35 U.S.C. 102(b) as being anticipated by JP 09-219181-A (JP '181).

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JP '181 discloses a rechargeable battery comprising a battery housing 1 containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells 1 linked together adjacent to one another between the short sides of their battery housings to form a battery pack with a required electrical capacity (see Fig. 2 as applied to claim 1).

JP '181 discloses a rechargeable battery comprising a battery housing 1 containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery module and these modules are arranged in parallel in a plurality of rows adjacent to one another between the long sides of the battery housings and the plurality of rows are linked together to form a battery pack with a required electrical capacity (Fig. 2 as applied to claim 2).

A plurality of cells are linked together with the elements for electromotive force of each cell provided inside a battery casing (defined by end plates 13) in which the individual battery housings 1 are integrally formed adjacent to one another between the short sides thereof (Fig. 2 as applied to claim 6).

The plurality of cells are sandwiched between a pair of binding plates 13 and the cells are integrally linked by tying the pair of binding plates together (Fig. 2 as applied to claim 7).

The plurality of cells are integrally linked with the linking position and linking direction varied as desired (Fig. 2 as applied to claim 8).

10. Claims 1-3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 03-109269- (JP '269)

JP '269 discloses a rechargeable battery comprising a battery housing containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery pack with a required electrical capacity (see Fig. 1 as applied to claim 1).

JP '269 discloses a rechargeable battery comprising a battery housing containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery module and these modules are arranged in parallel in a plurality of rows adjacent to one another between the long sides of the battery housings and the plurality of rows are linked together to form a battery pack with a required electrical capacity (Fig. 1 as applied to claim 2).

A heat transfer plate 3 is provided between the modules disposed in parallel (Fig. 1 as applied to claim 3).

A plurality of cells are linked together with the elements for electromotive force of each cell provided inside a battery casing 2 in which the individual battery housings 1

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are integrally formed adjacent to one another between the short sides thereof (Fig. 2 as applied to claim 6).

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claims 1-10 are rejected under 35 U.S.C. 102(a) as being anticipated by EP 952620-A (EP '620).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

EP '620 discloses a rechargeable battery comprising a battery housing containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery pack with a required electrical capacity (see Figs. 1 and 3 as applied to claim 1).

EP '620 discloses a rechargeable battery comprising a battery housing containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery module and these modules are arranged in parallel in a plurality of rows adjacent to one another between the long sides of the battery housings and the plurality of rows are linked together to form a battery pack with a required electrical capacity (Fig. 7 as applied to claim 2).



Heat transfer plates 21 and 22 are provided between the modules disposed in parallel (Figs. 2, 4 and 7 as applied to claim 3).

Heat transfer plates 21 and 22 are provided between the modules disposed in parallel and end heat transfer plates 23 and 24, exposed to the outside from the cells, are linked to the ends of the heat transfer plates 21 and 22 in the direction which the battery modules are linked (Figs. 2, 4 and 7 as applied to claim 4).

Air as a coolant flows through the heat transfer plates (abstract as applied to claim 5).

A plurality of cells are linked together with the elements for electromotive force of each cell provided inside a battery casing (defined by plates 21-24) in which the individual battery housings 1 are integrally formed adjacent to one another between the short sides thereof (Figs. 2, 4 and 7 as applied to claim 6).

A plurality of cells is sandwiched between a pair of binding plates 21/22 and/or 23/24 and the cells are linked together by tying the binding plates together (Figs. 1, 2 and 7-9 as applied to claim 7).

The plurality of cells are integrally linked with the linking position and linking direction varied as desired (Fig. 7 as applied to claim 8).

A plurality of ribs 12 and 14 are formed on the sides of the battery housings or case and a coolant is made to flow through the spaces formed between the ribs (Figs. 1 and 3 as applied to claims 9 and 10).

12. Claims 1-2 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,957,829 (Holl).

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Holl discloses a rechargeable battery comprising a battery housing containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery pack with a required electrical capacity (see Figs. 1 and 2 as applied to claim 1).

Holl discloses a rechargeable battery comprising a battery housing containing elements for electromotive force of a cell formed in a rectangular shape having short sides with a narrow width and long sides with a wide width, and a plurality of cells linked together adjacent to one another between the short sides of their battery housings to form a battery module and these modules are arranged in parallel in a plurality of rows adjacent to one another between the long sides of the battery housings and the plurality of rows are linked together to form a battery pack with a required electrical capacity (Figs. 2 and 3 as applied to claim 2).

A plurality of cells are linked together with the elements for electromotive force of each cell provided inside a battery casing in which the individual battery housings are integrally formed adjacent to one another between the short sides thereof (Fig. 3 as applied to claim 6).

A plurality of cells is sandwiched between a pair of binding plates and the cells are linked together by tying the binding plates together (Fig. 3 as applied to claim 7).

The plurality of cells are integrally linked with the linking position and linking direction varied as desired (Figs. 1-3 as applied to claim 8).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holl in view of U.S. patent No. 5,756,227 (Suzuki).

The teachings of claim 2 (with respect to Holl) have been discussed above and are incorporated herein.

The difference between instant claims 9 and 10 and Holl is that Holl does not disclose providing heat transfer plates between the modules (claims 3 and 4), of end heat transfer plates linked to the parallel heat transfer plates (claim 4), of flowing coolant through the heat transfer plates (claim 5).

Heat transfer plates are provided between the modules disposed in parallel (Figs. 2-11 and 16 of Suzuki as applied to claim 3).

In some embodiments the heat transfer plates, disposed in parallel, are linked to end heat transfer plates in the direction in which the battery modules are linked (Figs. 2-11 as applied to claim 4).

A coolant flows through the heat transfer plates (col. 10, line 49 through col. 11, line 17 as applied to claim 5).

The motivation for providing heat transfer plates between modules is that it cools the batteries.

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Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Holl by providing heat transfer plates between modules since it would have cooled the batteries.

15. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holl in view of either U.S. patent No. 5,766,801 (Inoue) or U.S. patent No. 4,468,440 (Evjen).

The teachings of claims 1, 2 and 6 (with respect to Holl) have been discussed above and are incorporated herein.

The difference between instant claims 9 and 10 and Holl is that Holl does not disclose providing a plurality of ribs on the battery case and flowing coolant in the spaces formed between the ribs.

Inoue discloses that it is desired to form ribs on the battery cases (Figs. 2 and 4). The ribs form vent spaces 31 which permits the flow of air through the cells and regulate the temperature of the battery module.

Evjen shows forming ribs 17 on the battery cases and flowing coolant into the spaces defined by the ribs to provided desired heating/cooling of the batteries (Fig. 2).

The motivation for providing a plurality of ribs on the battery case is to allow for air coolant to flow between the cells which regulates the temperature of the battery module.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Holl by providing ribs on the

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battery cases and flowing air along the spaces defined by the ribs since it would have regulated the temperature of the battery module.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gregg Cantelmo  
Patent Examiner  
Art Unit 1745

gc

  
June 26, 2003